

Warm-Up:

Write an equation in slope-intercept form for the line that satisfies each set of conditions.

1) slope -5, passes through (-3, -8)

$$\begin{aligned}y - y_1 &= m(x - x_1) \\ y + 8 &= -5(x + 3) \\ y + 8 &= -5x - 15 \\ \underline{-8 \qquad -15} & \\ y &= -5x - 23\end{aligned}$$

2) passes through (3, 11) and (-6, 5)

$$\begin{aligned}m &= \frac{11 - 5}{3 - (-6)} = \frac{6}{9} = \frac{2}{3} \\ y - 11 &= \frac{2}{3}(x - 3) \\ y - 11 &= \frac{2}{3}x - 2 \\ \underline{+11 \qquad +11} & \\ y &= \frac{2}{3}x + 9\end{aligned}$$

16, 19, 20

16) thru (-1, -2) and (-3, 1)

$$\begin{aligned}m &= \frac{-2 - 1}{-1 - (-3)} = \frac{-3}{2} \\ y + 2 &= -\frac{3}{2}(x + 1) \\ y + 2 &= -\frac{3}{2}x - \frac{3}{2} \\ \underline{-2 \qquad -\frac{3}{2}} & \\ y &= -\frac{3}{2}x - \frac{7}{2}\end{aligned}$$

19) x-int:  $\frac{5}{2}$ , y-int: 5  
 $(\frac{5}{2}, 0)$   $(0, 5)$

$$\begin{aligned}m &= \frac{5 - 0}{0 - \frac{5}{2}} = -\frac{5}{\frac{5}{2}} = \frac{5}{1} \cdot -\frac{2}{5} = -2 \\ y &= -2x + 5\end{aligned}$$

20) thru (3, -1)  $\perp$  to  $y = \frac{1}{3}x - 4$

$$\begin{aligned}y + 1 &= 3(x - 3) \\ y + 1 &= 3x - 9 \\ \underline{+1 \qquad +9} & \\ y &= 3x - 10\end{aligned}$$

$$\begin{aligned}4) \quad x + 2 &= \frac{1}{5}y \\ \underline{-\frac{1}{5}y \qquad -\frac{1}{5}y} & \\ 5(x - 2) &= y - 2 \\ 5x - 10 &= y - 2 \\ \underline{+10 \qquad +10} & \\ 5x &= y + 8 \\ y &= 5x - 8\end{aligned}$$

## Section 2-5: Statistics - Using Scatter Plots

Any data with two variables is called **bivariate data**.

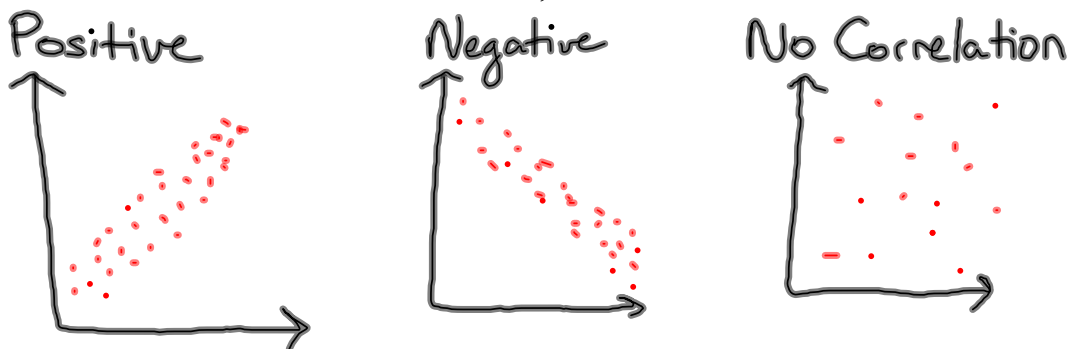
When bivariate data is graphed, it creates a **scatter plot**.

Scatter plots show a correlation between the data.

A **positive correlation** creates a line with a positive slope.

A **negative correlation** creates a line with a negative slope.

If no reasonable line can be drawn, then there is **no correlation**.



After graphing the data, a line that approximately represents all the data is called a **line of best fit**.

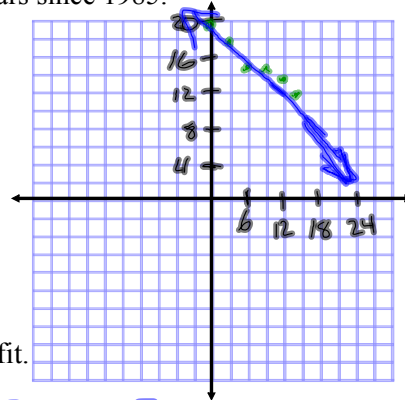
Lines of fit are used to make predictions regarding undiscovered data.

Recall the independent variable is represented on the x-axis and the dependent variable is represented on the y-axis.

Examples:

1) The table below shows the approximate percent of students who sent applications to two colleges in various years since 1985.

Years Since 1985	Percent
0	20
3	18
6	15
9	15
12	14
15	13



a) Make a scatter plot and draw a line of fit.

b) Find a prediction equation.  $m = \frac{18-20}{3-0} = \frac{-2}{3}$   
 $(0, 20)$   $(3, 18)$   $y = -\frac{2}{3}x + 20$

c) Predict the percent in 2010.

$$x = 25 \quad y = \frac{-2}{3}(25) + 20 \quad y = 3\frac{1}{3}\%$$

d) How accurate is the prediction?

*This equation is accurate for a short term period, but inaccurate in the long term.*

Homework: pg. 89-91 #4, 6, 12-15 all, 21, 22

Quiz Next Class over 2-3, 2-4